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MONTHLY PROGRESS REPORT NO. 23
for the period January 1-31, 1978
to
ENVIRONMENTAL PROTECTION AGENCY
REGION VIII

1860 Lincoln St., Suite 900
Denver, CO 80203

Contract No. 68-01-1946

Utah U-a/U-b Tract

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1860 Lincoln St., Suite 900
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by

Aeromet, Inc.
P.O. Box 45447
Tulsa, OK 74145

Utah U-a/U-b Tract

1.0 INTRODUCTION

Low level temperature and wind data were collected for January, 1978 at Bonanza, Utah. The data were collected using a 30 gm helium filled pilot balloon with a temperature sonde attached, a single theodolite and a TSR-2 receiver/recorder twice a day every other day. The observations were scheduled for ½ hour after sunrise and 1400L.

The pilot balloon had an ascent rate of 500 ft/min and was tracked by a single theodolite for 12 minutes with the azimuth and elevation angles recorded every 30 seconds on a cassette tape recorder. The tape was transcribed to a pilot balloon form after the observation.

The temperature sonde operated at 403 MHz and the signal was received by a ground plane antenna at least 16 ft AGL which was attached to the Aeromet, Inc. TSR-2 receiver/recorder. The TSR-2 receiver has a built-in Rustrak strip chart recorder and the temperature was recorded within the range from -50°C to +50°C. A baseline temperature calibration was performed with each T-Sonde by the adjustment of the recorded temperature to match the thermometer measured temperature next to the transmitting sonde. Once the calibration check was finished the balloon was released with the sonde attached and the temperature was recorded for at least 20 minutes. At the completion of each observation the data were mailed to Aeromet, Inc.

The collected temperature and wind data are accurate and have not been edited unless otherwise stated in the Pilot Balloon Summary Section. However, the obvious errors sometimes found in the recorded azimuth and elevation angles are corrected without mention. For example, the sequence of azimuth angles . . . 76.6, 75.3, 47.8, 73.8 . . . can be corrected without ambiguity. The more ambiguous errors are brought to the attention of the reader if editing has been performed, otherwise, the data are left as recorded and the filtering is left to the individual user. An example is the wind profile for Hanksville on 06/29/76 at 1300 MST found in the Monthly Progress Report No. 4. The azimuth angles starting 30 seconds after the launch and incremented by the same are as follows . . . 109.0, 110.0, 110.0, 281.0, 280.0, 282.0 . . . , while the corresponding elevation angles are as follows . . . 60.0, 57.6, 58.7, 58.6, 52.7, 44.3 . . . . The wind speed and direction change dramatically over the interval as can be seen in the report since these data were not edited.

2.0 DATA SUMMARY

2.1 Utah U-a/U-b Bonanza Field Summary

Data collection at the Bonanza U-a/U-b site for January 1978 was virtually nonexistent. The observer launched 5 balloons during the month resulting in 17% recovery of the temperature data. No wind data were recorded during the month. Aeromet contacted the observer on both the 2nd and 13th of January only to be reassured that data collection would continue as required. However, the observer released only two more balloons the remainder of the month.

Several attempts were made early in the month to inform Dave Joseph of the EPA about the problem and to explain that all observer possibilities were exhausted in Bonanza. Approximately 10 days later Aeromet was requested to move the site to either Delta or Lynndyl, Utah. The site was moved on 27 January and data collection resumed on 30 January.

Since there were no wind data collected at the U-a/U-b Bonanza site the bivariate frequency distribution of wind direction versus wind speed has been left out of this report.

2.2 Mixing Layer Height

The average mixing layer height was computed for the morning and afternoon based on the morning and 1400L temperature soundings. The balloon release ½ hour after sunrise is near enough to the minimum temperature to assume the correctness of the calculated mixing layer heights. The afternoon balloon release is generally not at the time of maximum heating and the user of the mixing layer height data must be aware that minor changes in the calculated values can be expected. Without equipping the field sites with minimum/maximum thermometers the extrapolation of the afternoon data can not be justified in establishing a data base for statistical analysis. The approximation of the afternoon maximum temperature would be a "calculated guess" for there are: 1) local effects which are to be determined and would be filtered out with extrapolation, 2) mountain effects which alter the lower 1500m (e.g. downslope effects), and 3) meteorological effects which can alter the expected change in the sounding (e.g. advection, moisture, etc.).

It is felt that to better define the mixing layer height that a variety of "heat island" effects should be viewed. The rigorous method would be to define 15 "heat island" effects ranging from 0 to 14°C and let the user decide which would best serve his needs. However, for these analyses 0°, +5° and +10° "heat island" effects are calculated and listed for the morning and afternoon soundings in the table Average Mixing Layer Height.

The symbol N/D means that no mixing layer height was defined and sfc is the abbreviation for surface.

2.3 Stability and Inversion Classification

The temperature and wind data were edited to remove data felt to cause anomalous results in the stability and inversion classification schemes. Only the stations listed prior to the table classifying the inversions were used in the calculations.

3.0 DATA PROCESSING

3.1 Printed and Plotted Output

Wind speeds and directions are computed from the azimuth and elevation angles measured while tracking the balloon with the theodolite. The wind speed and direction are plotted versus height and printed out at 30 second intervals. The printed output includes the AGL and MSL height of the calculated wind value and the orthogonal components of the wind. The wind data are also written to magnetic tape.

The temperature data are processed and plotted with the temperature and the lapse rate per 300 meters versus height at 15 second intervals. Tic marks are placed on the temperature plot at significant levels. A solid line to the right side of the plot indicates the data for that layer are interpolated temperature values. The temperature data are also printed out and recorded on magnetic tape. The asterisk beside a height value indicates a significant level while a "?" indicates interpolated data.

The temperature data are also processed to produce a monthly summary of inversion layers and lapse rates within the inversions and from the inversion base to the surface by means of the Holzworth classification scheme for inversions (Holzworth, G. C., 1974: "Climatological Data on Atmospheric Stability in the United States". Paper presented at the American Meteorological Society Symposium on Atmospheric Diffusion and Air Pollution, September 9-13, 1974. Santa Barbara, California.)

The temperature and wind data are processed together to produce a monthly average bivariate frequency distribution of wind direction versus wind speed represented in the 500m layer adjacent to the ground. The distribution is presented by the six Pasquill stability classes (A-F) and a summary independent of stability. If the $\Delta T/100m$ criterion is met but the wind speed criterion is not met, then the wind data are checked

STABILITY CLASS	ΔT (°C/100m)	WIND SPEED
A	<-1.9	≤2
B	-1.9 - -1.7	≤5
C	-1.7 - -1.5	≤6
D	-1.5 - -0.5	ALL SPEEDS
E	-0.5 - 1.5	≤5
F	>1.5	≤3

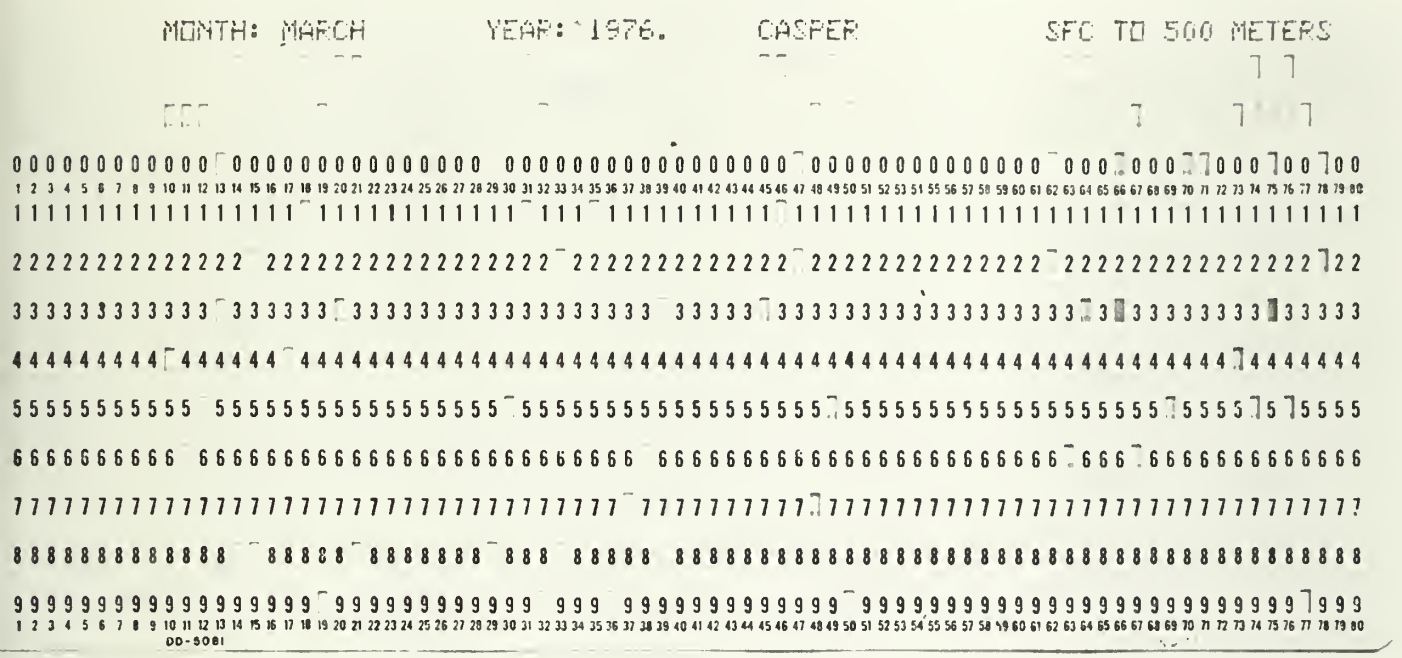
against the criterion for the next stability class, always cascading to the D stability class. Once the wind speed criterion is met the data are classified under the new stability class even though now the lapse rate exceeds the class criterion. For example, if the $\Delta T/100m$ value is

1.7 and the wind speed is 7 m/s, the lapse rate criterion is met for the stability class F, however the wind speed criterion is exceeded. The wind speed is greater than the 5 m/s maximum limit for class E but falls within the criterion of class D, which includes all wind speeds. As a result the observational data with a ΔT value of 1.7°C/100 m and a wind speed value of 7 m/s are classified under stability class D, not class F.

The data are also punched on computer cards in a format compatible with the STAR PROGRAM of the National Climatic Center, NOAA, U.S. Department of Commerce.

3.2 Punched Output

The punched output from the bivariate frequency distribution calculations include a header card as illustrated below, and the



punched distribution data for each wind direction under each stability class in agreement with the "star" output. The stability classes are number coded as follows:

STABILITY CLASS	NUMBER CODE
A	1
B	2
C	3
D	4
E	5
F	6
Independent of Stability	7

The station I.D. numbers are as follows:

STATION	I.D. NUMBER
Casper, Wyoming	1
Colorado C-b Tract	2
Craig, Colorado	3
Escalante, Utah	4
Hanksville, Utah	5
Rock Springs, Wyoming	6
Utah U-a/U-b Tract	7

The month and season number codes are as follows:

MONTH	1-12
SEASON	13 = DJF
	14 = MAM
	15 = JJA
	16 = SON
ANNUAL	17

PILOT BALLOON SUMMARY
Utah U-a/U-b Bonanza
January, 1978

January 2	MORN	
	AFTN	
January 4	MORN	
	1410	Temperature values were interpolated over the interval from 20 1/2 to 22 1/4 minutes. No wind data recorded.
January 6	MORN	
	1403	No wind data recorded.
January 8	MORN	
	AFTN	
January 10	MORN	
	AFTN	
January 12	MORN	
	1357	No wind data recorded.
January 14	MORN	
	AFTN	
January 16	MORN	
	1331	No wind data recorded.
January 18	MORN	
	1417	No wind data recorded.

PILOT BALLOON SUMMARY
Utah U-a/U-b Bonanza
January, 1978

January 20	MORN
	AFTN
January 22	MORN
	AFTN
January 24	MORN
	AFTN
January 26	MORN
	AFTN
January 28	MORN
	AFTN
January 30	MORN
	AFTN

AVERAGE MIXING LAYER HEIGHT
Utah U-a/U-b Bonanza
January, 1978

HEIGHT IN METERS

	MORNING			AFTERNOON		
DATE	0°	+5°	+10°	0°	+5°	+10°
2						
4				250m	900m	N/D
6				150m	N/D	N/D
8						
10						
12				500m	2000m	N/D
14						
16				sfc	300m	2000m
18				50m	250m	1050m
20						
22						
24						
26						
28						
30						

CLOUD COVER AND SIGNIFICANT WEATHER
Utah U-a/U-b Bonanza
January 1978

DATE	MORNING	AFTERNOON
2		
4		clear
6		overcast
8		
10		
12		overcast
14		
16		scattered
18		overcast, fog
20		
22		
24		
26		
28		
30		

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5763

DATE 01/04/78 TIME 14:10MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
257.	524.	0.82	-1.18

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5768

DATE 01/06/78 TIME 14:03MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	193.	0.25	-4.99

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5768

DATE 01/12/78 TIME 13:57MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
431.	586.	0.03	-1.55

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5761

DATE 01/16/78 TIME 13:51MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	381.	0.70	0.0

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5711

DATE 01/18/78 TIME 14:17MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
114.	305.	1.77	-0.59

MONTH: JANUARY YEAR: 1978 UTAH UAUB ELEV 1670 METERS

HOLZWORTHIS CLASSIFICATION SCHEME FOR INVERSIONS
MODIFIED TO SHOW TOTAL NUMBER INSTEAD OF PERCENT

	INVERSION BASE HEIGHT (M)										
THICKNESS (METERS)	SFC	1- 100	101- 250	251- 500	501- 750	751- 1000	1001- 1500	1501- 2000	2001- 2500	2501- 3000	TOTAL
1 - 100	0	0	0	0	0	0	0	0	0	0	0
101 - 250	0	1	1	1	0	0	0	0	0	0	3
251 - 500	1	0	0	1	0	0	0	0	0	0	2
501 - 750	0	0	0	0	0	0	0	0	0	0	0
751 - 1000	0	0	0	0	0	0	0	0	0	0	0
1001 - 1500	0	0	0	0	0	0	0	0	0	0	0
> 1500	0	0	0	0	0	0	0	0	0	0	0
INV TOTAL	1	1	1	2	0	0	0	0	0	0	5
DT/DZ 5		0	0	0	0	0	0	0	0.		0
FROM INV 4		0	1	0	0	0	0	0	0		1
BASE 3		0	0	1	0	0	0	0	0		1
TO 2		0	0	1	0	0	0	0	0		1
SFC 1		1	0	0	0	0	0	0	0		1

NO INV 101	0	0	0	0	0	0	DT/DZ (DEG C)/100M
DT/DZ FOR 5	0	0	0	0	0	0	5= 0.00 TO -0.40
SAME 4	0	0	0	0	0	0	4=-0.41 TO -0.80
LAYERS 3	0	0	0	0	0	0	3=-0.81 TO -1.20
AS INV 2	0	0	0	0	0	0	2=-1.21 TO -1.60
BASE 1	0	0	0	0	0	0	1=<-1.60

UTAH UAUB ELEV 1670 METERS SOUNDING ID 5763

DATE 01/04/78 TIME 1411GMST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 500M	D/T LAPSE	WS M/S	WD DEG
	SFC		4.04		0.0		0.5	270.
0.8	150	1820	2.33	-2.31	-3.19	-0.26	M	M
1.5	* 256	1932	1.60		0.0	2.93		
1.9	324.	2000.	2.26	-0.07	2.81	5.74	M	M
1.8	300	1976	2.25	-0.01	2.81	5.74	M	M
3.1	500	2176	3.78	-1.54	-0.56	2.37	M	M
3.3	* 523	2199	3.79		-0.56	2.37		
5.0	824.	2500.	0.84	-2.94	-1.69	1.23	M	M
8.1	1324.	3000.	-3.49	-4.34	-3.82	-0.89	M	M
14.0	2324.	4000.	-11.74	-8.25	-2.34	0.59		
20.1	3324.	5000.	-20.06	-8.32	-4.17	-1.25		
25.1	4324.	6000.	-29.74	-9.68	-2.65	0.50		

UTAH UAUB ELEV 1670 METERS SOUNDING ID 5763

DATE 01/04/78 TIME 1411GMST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1670.	0.5	0.0	0.5	270.

UTAH UAUB — ELEV 1076 METERS — SOUNDING ID 5768

DATE 01/06/78 TIME 14:03:51ST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
SFC			3.69		0.0		1.5	90.
1.0	150	1826	2.07	-1.62	0.38	3.30	M	M
2.0	300	1976	1.70	-0.35	-2.20	0.67	M	M
2.1	324.	2000.	1.33	-0.36	-2.26	0.67	M	M
3.2	500	2176	-0.13	-1.46	-2.46	0.47	M	M
5.0	824.	2576.	-3.01	-2.88	-2.86	0.07	M	M
8.3	1324.	3000.	-7.89	-4.88	-2.51	0.41	M	M
14.1	2324.	4000.	-17.04	-9.15	-3.16	-0.23		

UTAH UAUB — ELEV 1076 METERS — SOUNDING ID 5768

DATE 01/06/78 TIME 14:03:51ST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1076.	-1.5	-0.0	1.5	90.

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5768

DATE 01/12/78 TIME 13:57MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		3.09		0.0		1.5	90.
0.7	150	1826	0.07	-3.02	-7.54	-4.61	M	M
1.2	324.	2000.	-1.07	-1.14	-3.79	-0.86	M	M
1.1	300	1976	-1.05	0.02	-3.79	-0.86	M	M
2.2	560	2176	-1.77	-0.72	1.90	4.83	M	M
4.3	824.	2500.	-1.77	-0.00	0.95	3.88	M	M
7.6	1324.	3000.	-4.87	-3.09	-2.69	0.24	M	M
13.1	2324.	4000.	-15.02	-10.15	-4.91	-1.99		
18.0	3324.	5000.	-24.12	-9.10	-2.40	0.52		
23.1	4324.	6000.	-34.16	-10.04	-4.06	-1.13		

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5768

DATE 01/12/78 TIME 13:57MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1676.	-1.5	-0.0	1.5	90.

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5761

DATE 01/16/78 TIME 13:31MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP. DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		2.74		0.0		1.0	220.
1.0	150	1826	3.98	1.23	0.75	3.67	M	M
2.0	300	1976	4.92	0.95	2.42	5.34	M	M
2.1	324.	2000.	5.10	0.18	0.56	3.49	M	M
2.5	* 380	2056	5.39		-0.56	2.37		
3.3	500	2176	3.99	-1.11	-2.24	0.69	M	M
5.4	824.	2500.	1.60	-2.39	-2.82	0.11	M	M
8.7	1324.	3000.	-1.76	-3.36	-0.38	2.55	M	M
14.8	2324.	4000.	-10.06	-8.30	-3.11	-0.18		
21.3	3324.	5000.	-14.54	-4.47	-1.38	1.55		

UTAH UAUB ELEV 1676 METERS SOUNDING ID 5761

DATE 01/16/78 TIME 13:31MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1676.	0.7	0.8	1.0	220.

UTAH UAUB ELEV 1670 METERS SOUNDING ID 5711

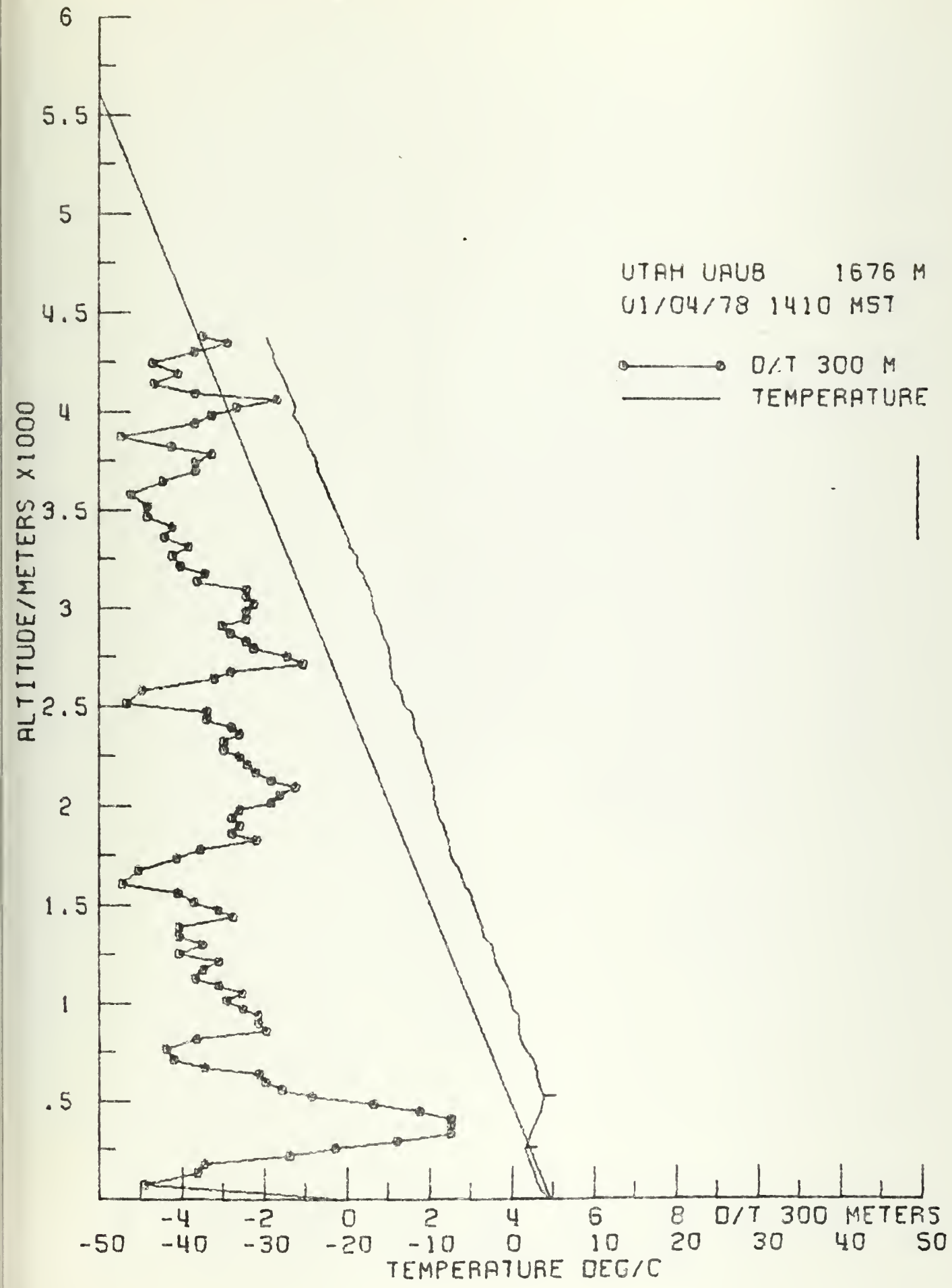
DATE 01/18/78 TIME 14:17MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

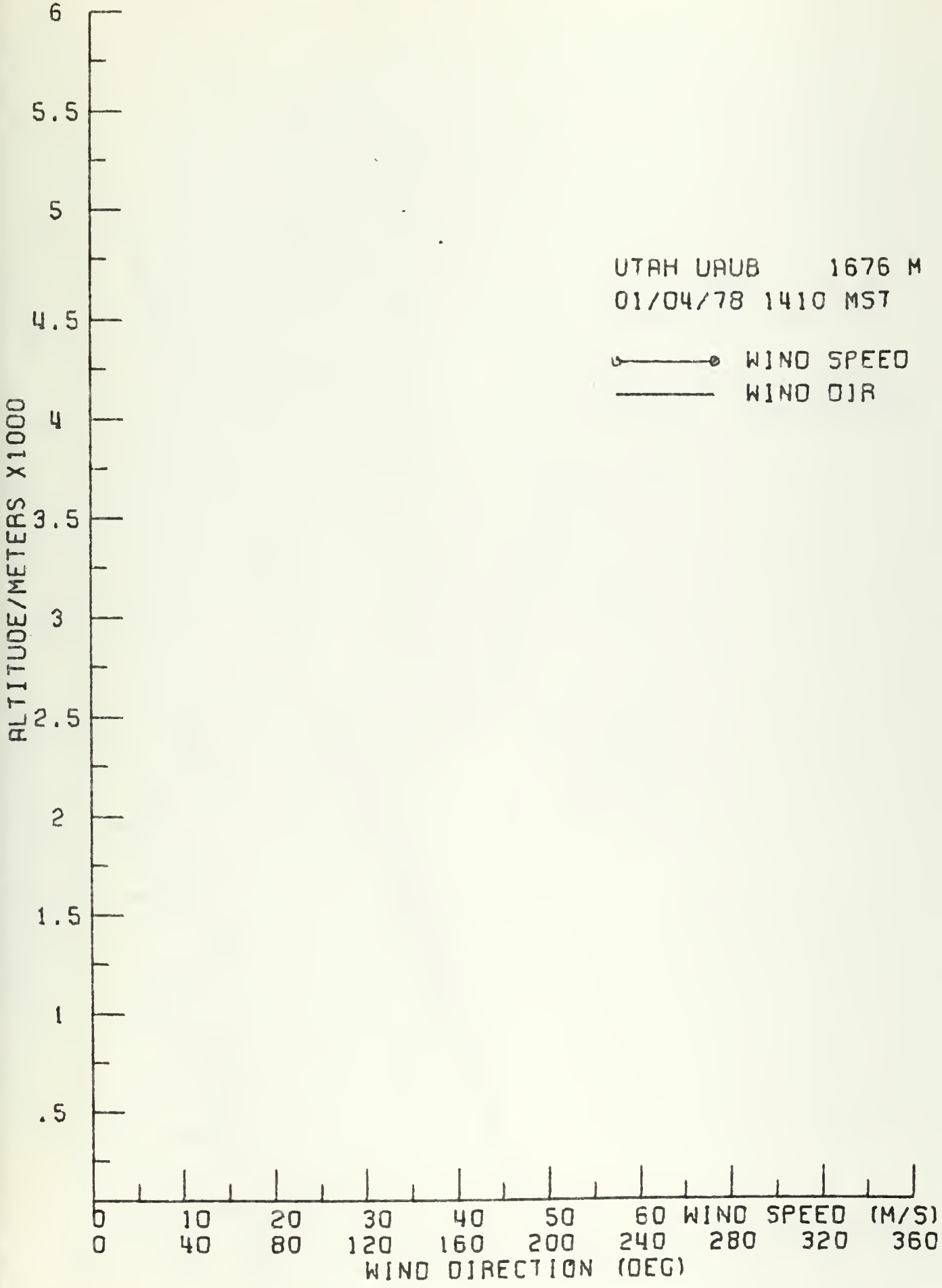
TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
SFC			-1.86		0.0		1.0	220.
1.0	150	1826	-2.06	-0.20	5.12	8.05	M	M
2.0	300	1976	0.83	2.89	0.38	3.31	M	M
2.0	* 304	1980	0.83		0.38	3.31		
2.1	324.	2000.	0.85	-0.18	-0.94	1.98	M	M
3.3	500	2176	-0.59	-1.24	-1.89	1.03	M	M
5.1	824.	2500.	-3.85	-3.26	-5.74	-2.81	M	M
5.4	* 989	2665	-5.45		3.24	-6.17		
6.5	*1103	2779	-2.05		2.30	5.23		
7.8	1324.	3000.	-4.76	-0.91	-2.11	0.82	M	M
14.2	2324.	4000.	-12.34	-7.59	-3.32	-0.40		

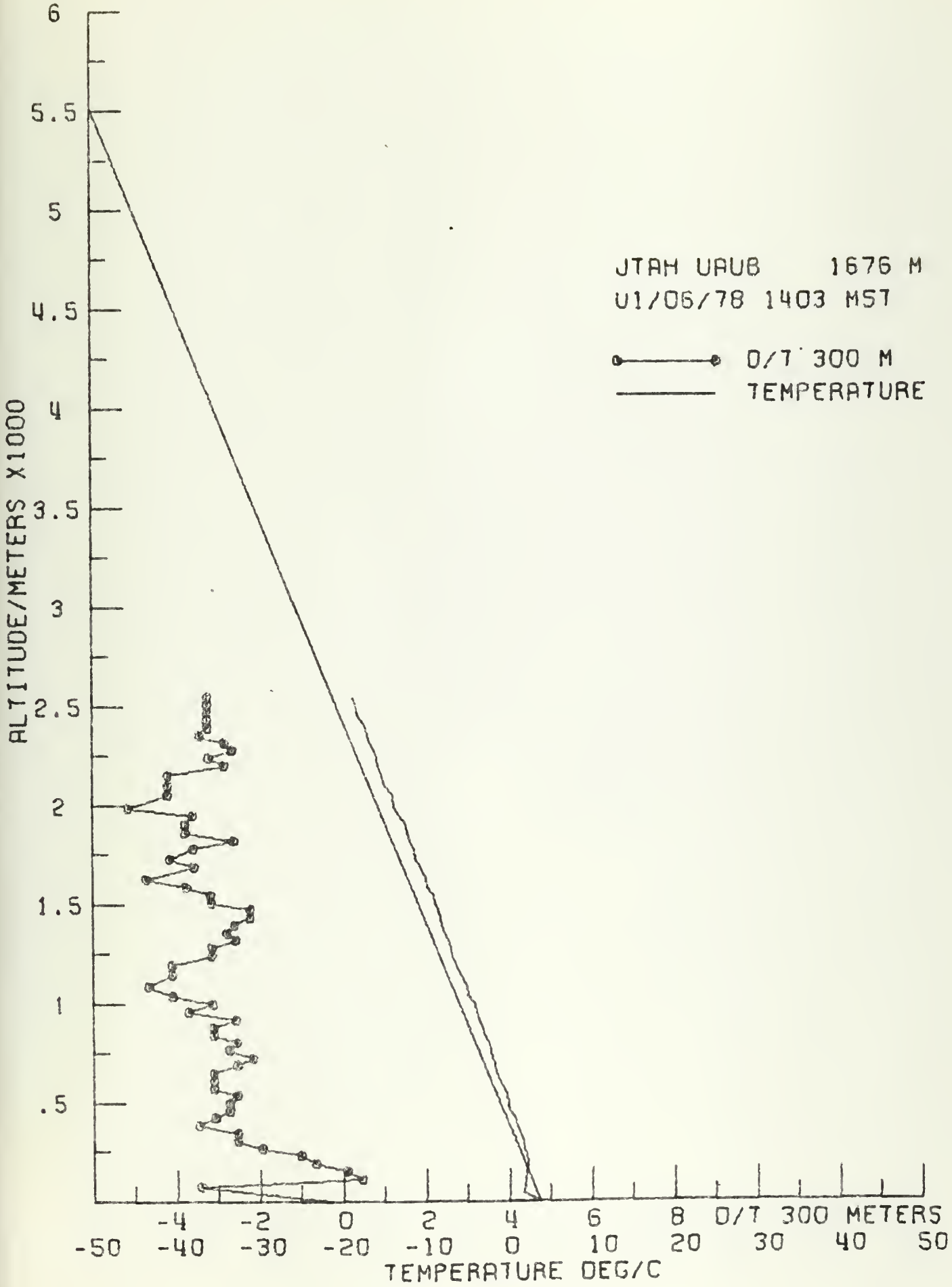
UTAH UAUB ELEV 1670 METERS SOUNDING ID 5711

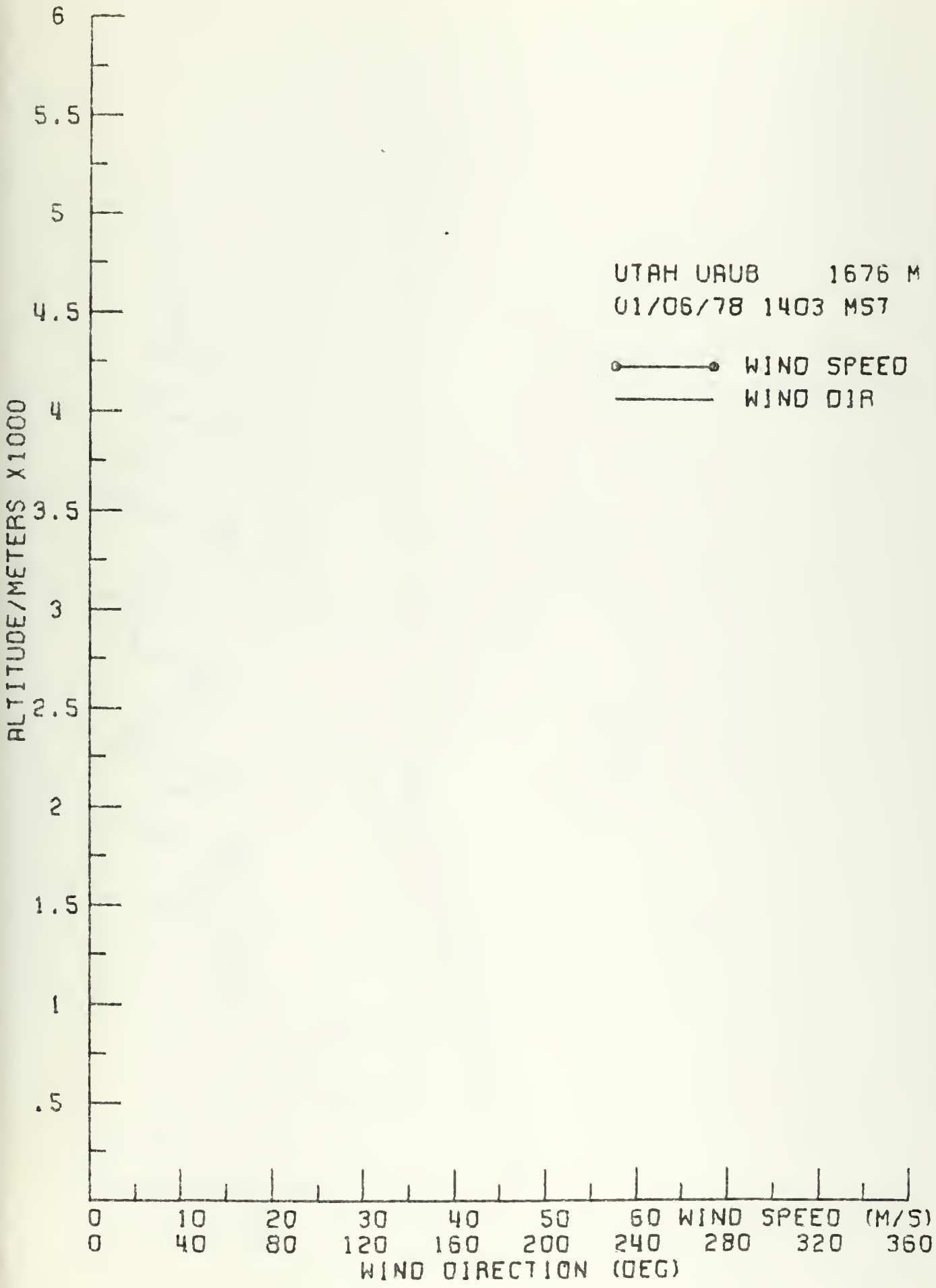
DATE 01/18/78 TIME 14:17MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

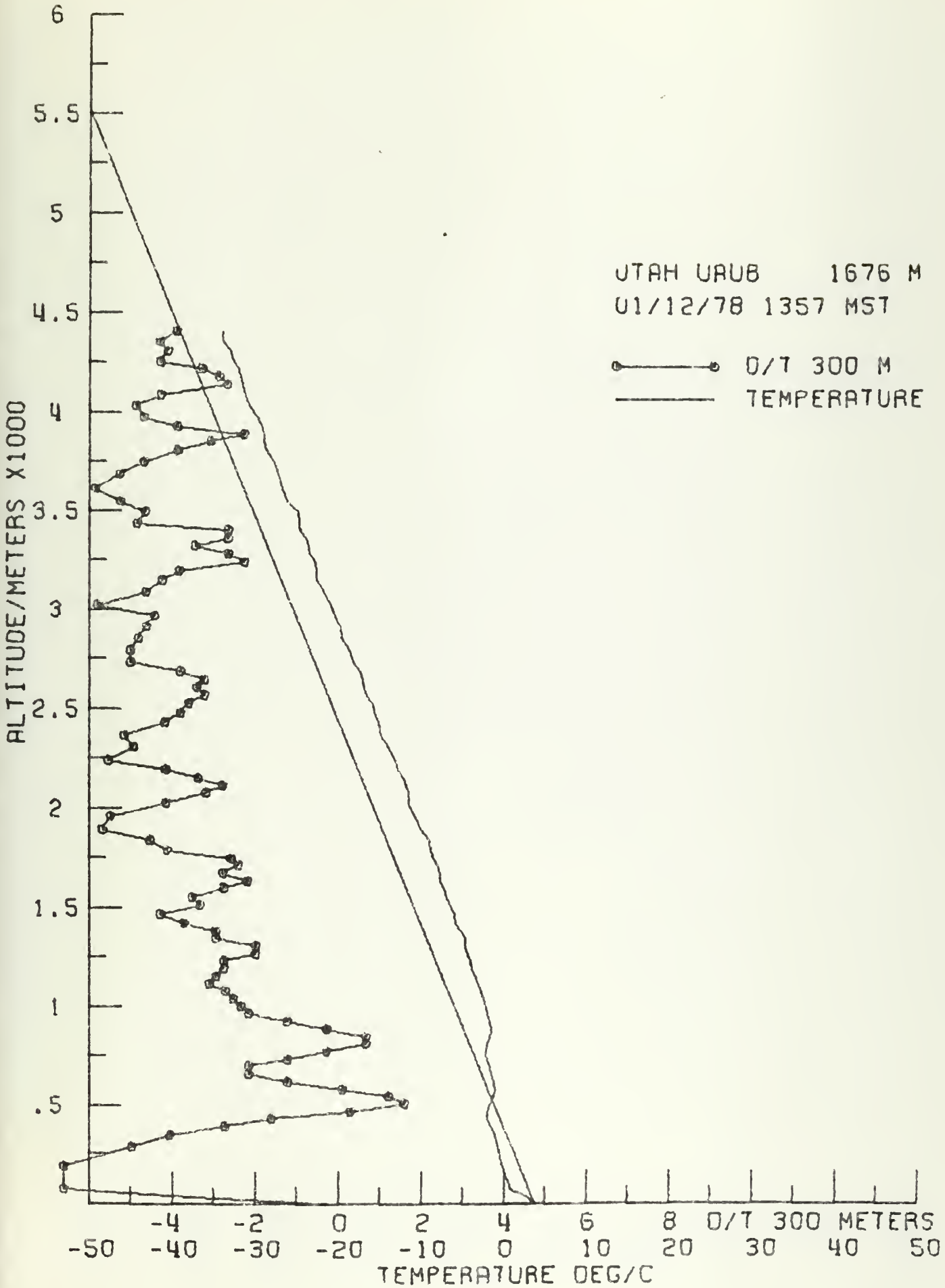
TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	1670.	0.7	0.8	1.0	220.

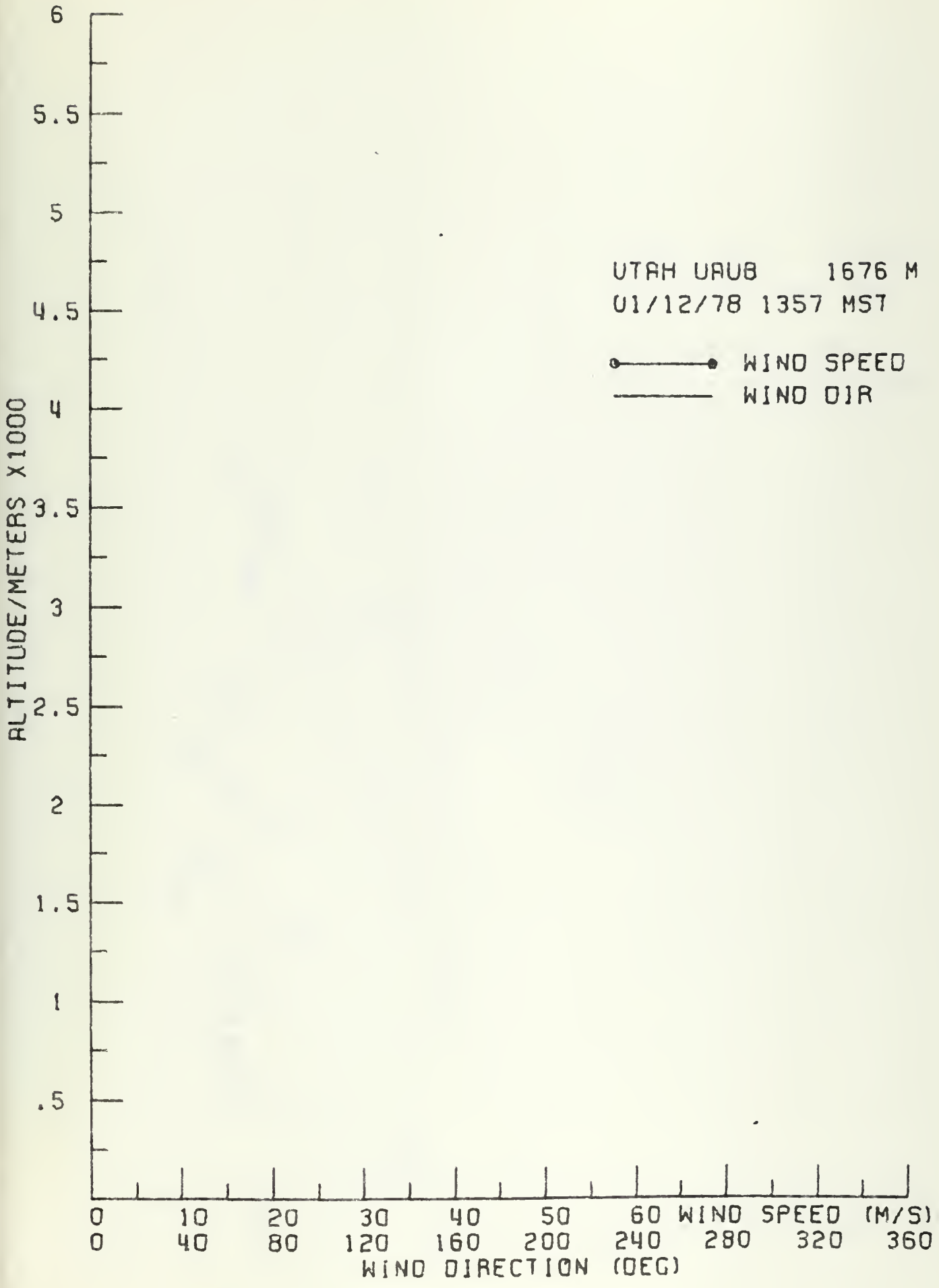

UTAH UAUB 1676 M
01/04/78 1410 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C

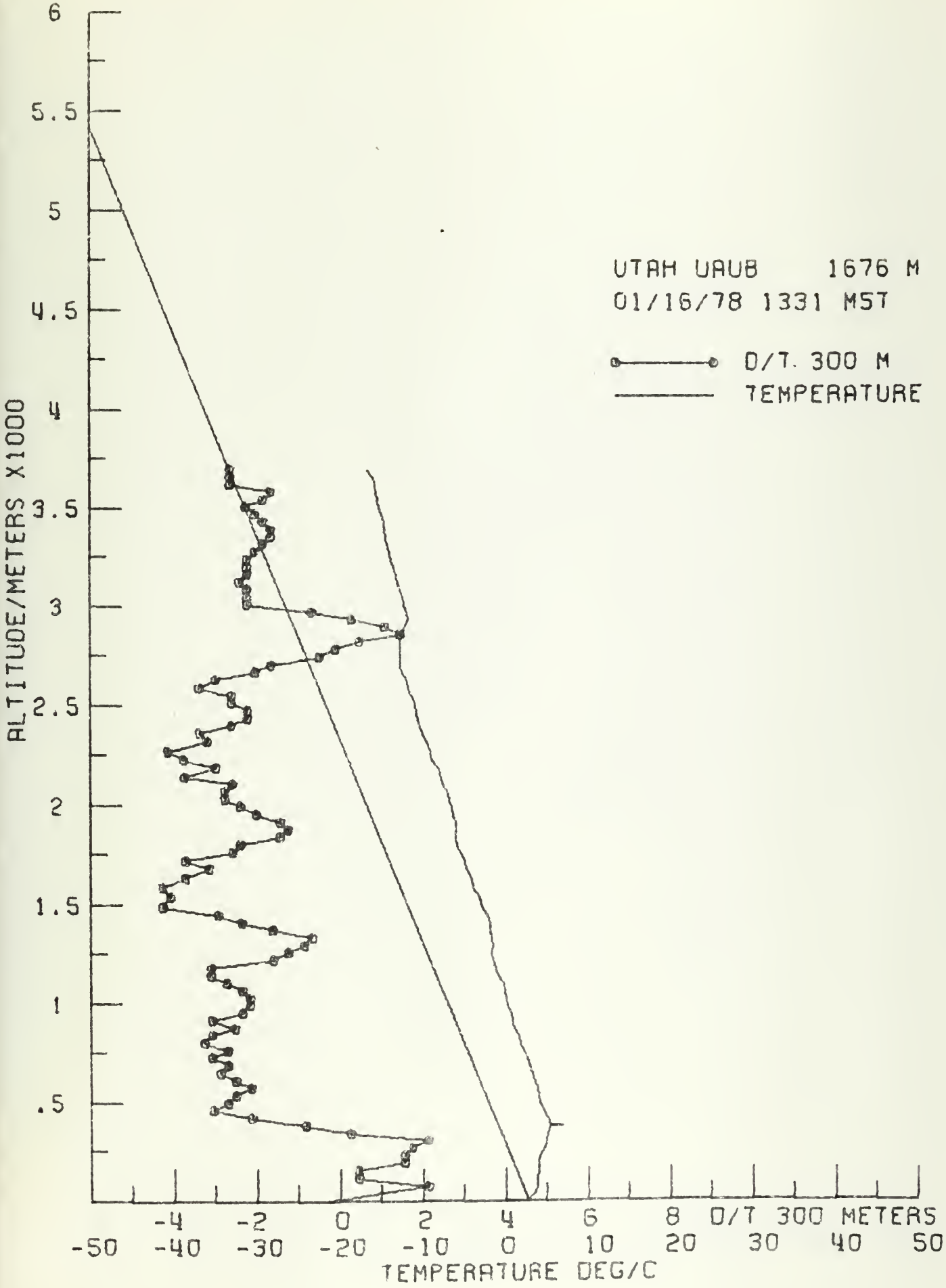

UTAH UAUB 1676 M
01/04/78 1410 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)

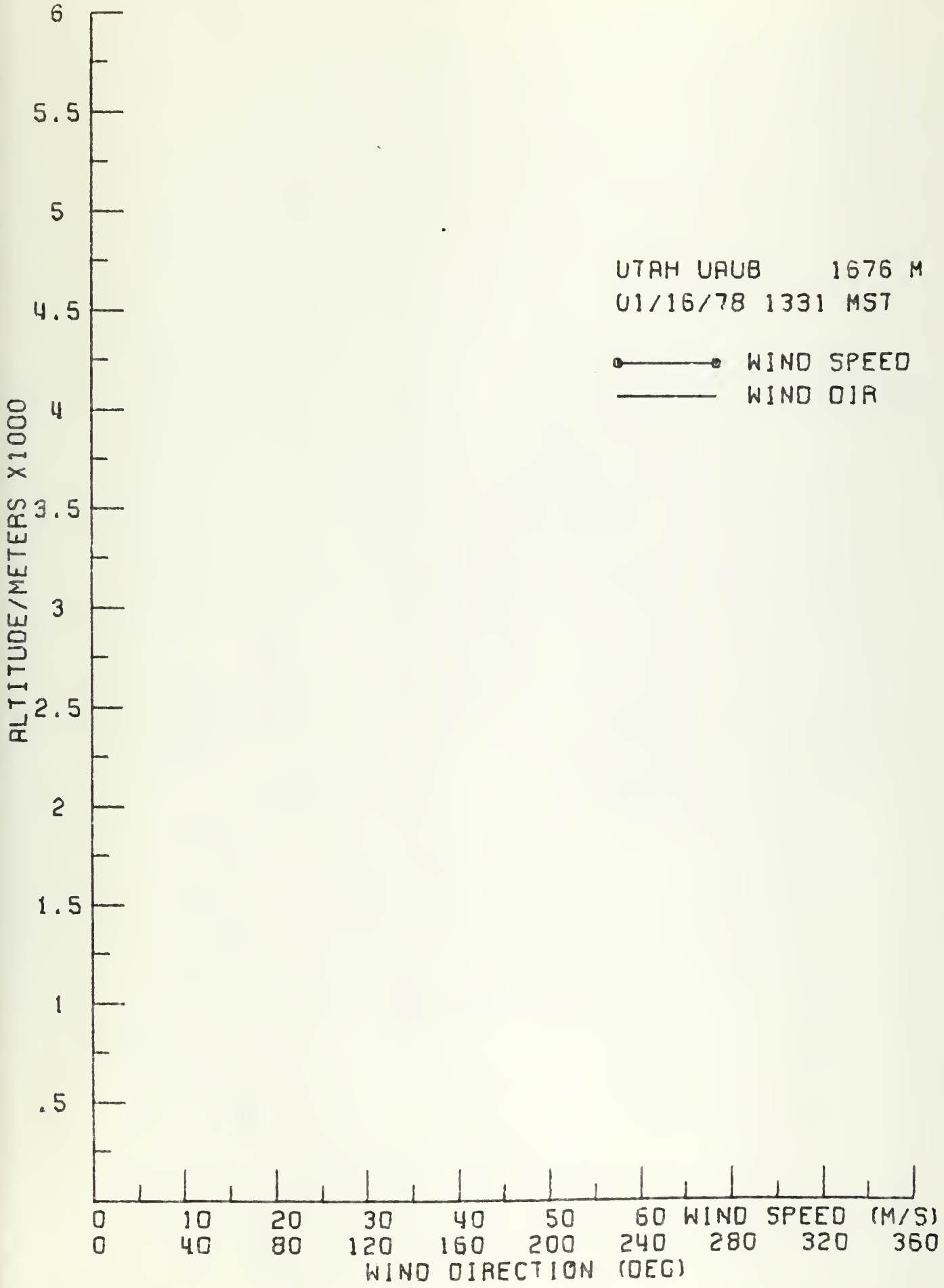

JTAH UAUB 1676 M
01/06/78 1403 MST
O/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4 -2 0 2 4 6 8 O/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C


UTAH UAUB 1676 M
01/06/78 1403 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


UTAH UAUB 1676 M
01/12/78 1357 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4
-2
0
2
4
6
8
D/T 300 METERS
-50
-40
-30
-20
-10
0
10
20
30
40
50
TEMPERATURE DEG/C


UTAH UAU8 1676 M
01/12/78 1357 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


UTAH UAUB 1676 M
01/16/78 1331 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C


UTAH UAUB 1676 M
01/16/78 1331 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
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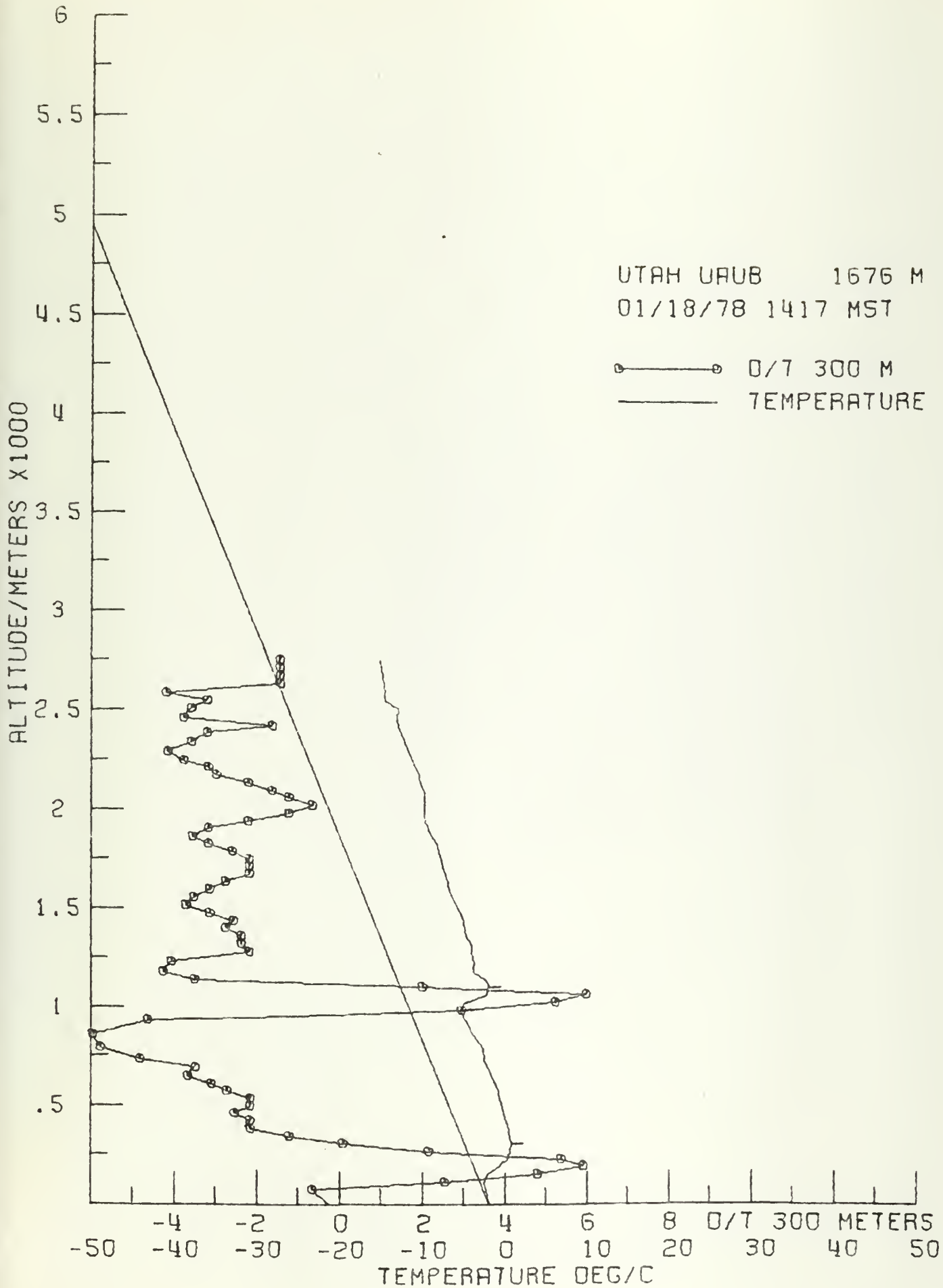
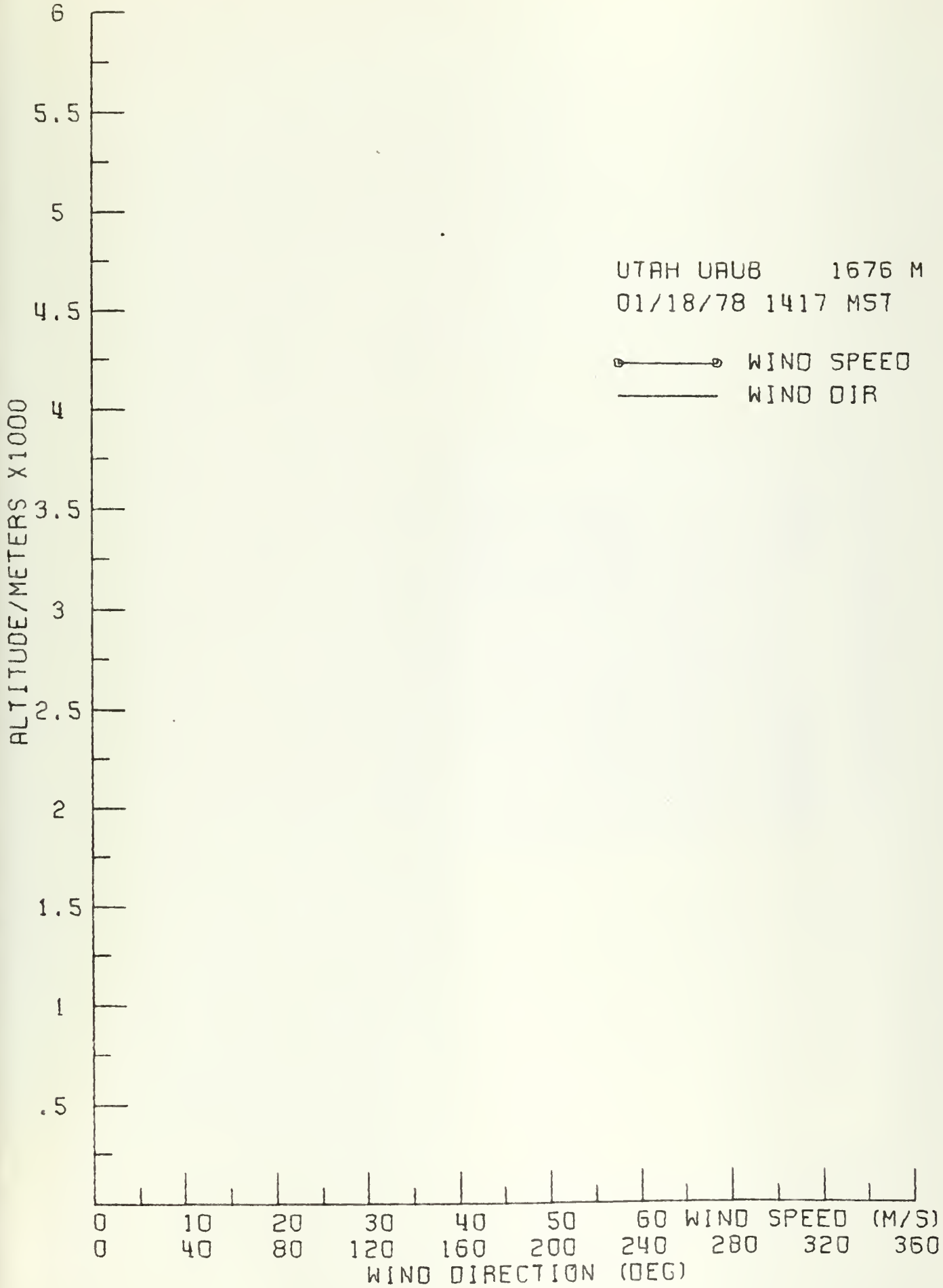
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


UTAH UAUB 1676 M
01/18/78 1417 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4 -2 0 2 4 6 8 D/T 300 METERS
-50 -40 -30 -20 -10 0 10 20 30 40 50
TEMPERATURE DEG/C


UTAH UAUB 1676 M
01/18/78 1417 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)

Form 1279–3
(June 1984)

BORROWER'S CA

IN DEF JUBZ WAF nuzzs

Monthly progress report
for the period

DATE LOANED	BORROWER

USDI – BLM

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AREA S[illegible] SUPERVISOR